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Common Infectious Diseases That Cause Abortions in Cattle

This NebGuide briefly discusses the common infectious diseases that cause abortions in cattle.

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"Abortion" is the expulsion of the fetus prior to the end of the normal gestation period. Many abortions occur very early after conception and the embryos or fetuses are so small that they may not be seen. Other abortions may occur near normal calving time and it is difficult to determine whether the cow has aborted or whether a premature birth has occurred.

Abortions have many causes which may include physiological problems (such as hormonal imbalances), metabolic problems, toxicoses and/or infectious diseases caused by protozoa, bacteria or viruses. Abortions, regardless of cause, may be sporadic or they may occur as "storms."

This NebGuide will discuss some of the known protozoal, bacterial and viral diseases that cause abortions in cattle.

Protozoal Diseases

1. ***Trichomoniasis***. Caused by the protozoal organism *Tritrichomonas foetus*, trichomoniasis is a venereal disease that can cause abortions and infertility. Infected cows or heifers may have a uterine discharge for several months. Vaccines are available but their efficacy has been questioned. The use of virgin bulls or artificial insemination (A.I.) will aid in control. Infected bulls show no signs of disease, but they may harbor *T. foetus* in their prepuce (sheath) for long periods unless specific treatment is administered.

A diagnosis of *trichomoniasis* is made by identifying *T. foetus* in properly prepared preputial or

vaginal fluids. The assistance of a veterinary diagnostic laboratory usually is necessary for an accurate diagnosis.

2. ***Sarcocystosis*** ("Sarcosporidiosis"). *Sarcocystis* species are protozoa that occasionally cause abortion in cattle. Abortions are usually sporadic but they may occur as "storms." *Sarcocystis* is spread by carnivores (wild and domestic) and cattle become infected by ingesting feed or forages contaminated by carnivore feces. Abortions can occur at any stage of gestation. There is no effective treatment for cattle infected with *Sarcocystis*. Although not always feasible, controlling wild carnivore populations is the only known method of management. A diagnosis of abortion caused by *Sarcocystis* requires the assistance of a diagnostic laboratory.
3. ***Neosporosis***. *Neospora* species are protozoa that only recently have been recognized as causes of abortions in cattle. Abortions may be sporadic or they may occur as "storms." *Neospora* is the major cause of abortions in drylot dairies in California and is frequently also diagnosed in Nebraska. Although dairy cattle appear to be at greatest risk for infection, there are reports of abortions caused by *Neospora* in beef cattle. The mode of transmission of *Neospora* is unknown. It is believed that *Neospora* has a life cycle similar to *Sarcocystis*. Thus, carnivorous birds or mammals are believed to spread the disease and cattle are believed to become infected by ingesting feed or forages contaminated by carnivore feces. There is no effective treatment for cattle infected with *Neospora*. Controlling wild carnivore populations is believed, at present, to be the only method of management. A diagnosis of abortion caused by *Neospora* requires the assistance of a diagnostic laboratory.

Bacterial Diseases

1. ***Brucellosis*** (contagious abortion, Bangs disease). Although federal and state regulations have helped to control this disease, brucellosis is still a threat. Brucellosis is caused by the bacterium *Brucella abortus* and it is spread via infected placentas, vaginal discharges and aborted fetuses. Following the ingestion of *B. abortus*, susceptible cows or heifers may have abortions, retained placentas, weak calves or infertility problems. Milk from an infected cow also may harbor *B. abortus*. The infected milk creates a public health problem because *B. abortus* causes brucellosis ("undulant fever") in humans.

A diagnosis of brucellosis is made via several blood tests. A "milk ring test," using milk from bulk tanks, detects brucellosis in dairy herds.

There is no effective treatment for brucellosis. The disease is controlled by federal/state mandated vaccination of heifer calves. Each heifer calf must then be identified as an "official vaccinate." Cattle known to have brucellosis are quarantined, removed from the herd and sold for slaughter. Quarantines are imposed by state and federal authorities until the herd has been proven to be free of the disease.

2. ***Leptospirosis*** (Lepto). The five species of *Leptospira* that infect cattle in the United States are *L. pomona*, *L. icterohemorrhagiae*, *L. grippityphosa*, *L. hardjo*, and *L. canicola*. Infected cattle transmit the *Leptospira* bacteria to susceptible cattle via infected urine.

Although rarely seen, the clinical signs associated with leptospirosis in adult cattle can include icterus (yellow mucous membranes) and hemoglobinuria (bloody urine). The milk from lactating cows with leptospirosis may be thick, yellow and blood-tinged. Abortions typically occur two to five weeks after infection and they may occur at any time during gestation.

A blood test may aid in the diagnosis of leptospirosis. However, an accurate diagnosis requires laboratory examination and testing of tissues from infected cattle or aborted calves.

Effective vaccines are available to prevent this disease.

3. **Campylobacteriosis (Vibriosis).** This venereal disease is a cause of early embryonic death and infertility in cows throughout the world. *Campylobacter fetus* (formerly called *Vibrio fetus venerealis*) is the bacterium responsible for causing the disease. *Campylobacter fetus* is transmitted by infected bulls during mating. The practice of artificial insemination also can spread the disease if *C. fetus* is present in the semen.

Repeat breeding activity generally is seen with campylobacteriosis and irregular estrus cycles are common. Frequently, because of its small size, the embryo or fetus is not found although an abortion has occurred. Some cows or heifers may carry the fetus longer and abort a fetus at five to six months of gestation. Campylobacteriosis can be self-limiting and some of the cattle recover within a year. However, "carrier" cows are common, and *C. fetus* can be spread to non-infected bulls during mating.

Campylobacteriosis can be prevented by the administration of a quality vaccine about one month prior to breeding. Effective vaccines are available, but losses still occur because the vaccines are not used in many herds. Other control measures include keeping infected cattle isolated from non-infected cattle (usually virgin heifers) by maintaining separate herds, and by using disease-free bulls in the non-infected herd. The use of artificial insemination also is used to prevent campylobacteriosis. Most A.I. organizations test the semen to assure that it is free of *C. fetus*.

A diagnosis of campylobacteriosis is confirmed by the culture of *C. fetus* from cervical mucus or from an aborted fetus.

Viral Diseases

1. **IBR (Infectious Bovine Rhinotracheitis or "Red Nose").** Infectious Bovine Rhinotracheitis virus is the cause of respiratory disease of cattle. However, in cows and heifers, this virus can also cause vulvovaginitis (inflammation of the vulva and vagina) and abortion. Abortion typically occurs about 20 to 45 days after infection.

A diagnosis of IBR-induced abortion is made by laboratory examination and testing of fetal tissues. A blood test may aid in the identification of infected cattle.

The control of IBR infections can be accomplished by the use of vaccines. The use of modified live vaccines (MLV) in non-immune pregnant cows, or in animals in contact with pregnant cows, can occasionally cause abortion. An MLV intranasal vaccine is also available that can be used on pregnant cows if warranted.

Killed IBR vaccines also are available and can be safely used on pregnant cows. The killed IBR vaccine requires booster shots from time to time to maintain proper immune status.

Because IBR is very common, it is advisable that all replacement heifers be vaccinated 30 to 60 days before breeding and older cows receive booster shots of the vaccine type as recommended by the practicing veterinarian.

2. **BVD** (Bovine Virus Diarrhea). Bovine Virus Diarrhea virus infection can cause abortion, weak calves at birth, calves with brain damage (cerebellar hypoplasia) or other abnormalities of fetal development. Clinical signs in newborn calves infected with BVD can include fever, nasal discharge, diarrhea and inability to move about normally (ataxia).

A diagnosis of BVD virus infection requires laboratory examination of the fetus or calf. A blood test may aid in the identification of infected cattle.

The use of MLV-BVD vaccines may cause serious animal loss in some instances and one should always discuss the use of the product with the practicing veterinarian. The risk of these problems should be weighed against the probability of losses resulting from naturally-occurring BVD virus infection before a decision is made about use of MLV-BVD vaccines.

Summary

The infectious diseases mentioned in this NebGuide are some of the more common causes of abortion in cattle. However, there are many other non-infectious causes of abortion. The practicing veterinarian, by training and experience, is the best-qualified person in the community to contact in regard to the diagnosis and control of infectious causes of abortion in cattle.

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